Do Firms Time Seasoned Equity Offerings? Evidence from SEOs Issued Shortly after IPOs

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October 2013

Abstract: This paper examines whether firms take advantage of brief windows of opportunity to time seasoned equity offerings (SEOs) when their equity is substantially overvalued given managers' private information. We find that firms experiencing larger IPO underpricing, larger stock price run–ups after the IPO, and larger IPO offer size tend to return to the market with an SEO earlier than the others. Firms which issue SEOs quickly after an IPO underperform in comparison to their peers. The mean three-day abnormal return of firms issuing SEOs within six months of IPOs is 2.69% lower than that of firms issuing SEOs six months or more following their IPOs. Firms issuing SEOs shortly after their IPOs also exhibit worse long-run stock returns and operating performance. The results are most consistent with the hypothesis that managers with private information time SEOs in ways that benefit existing shareholders.

JEL classification: G14, G34, G32.
Keywords: Seasoned equity offering; Initial public offering; Market timing; Market feedback

We thank Matt Billett, Philip Davis, Jon Garfinkel, Erik Lie, Yimin Qian, Ashish Tiwari, and Anand Vijh for helpful comments and suggestions. All remaining errors are our own.

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1. Introduction

Some firms decide to issue seasoned equity offerings (SEOs) very quickly after an initial public offering (IPO). Such corporate decisions are puzzling for the following reasons. First, it is known that the average impact upon firm value from an SEO is negative. So why issue at all? Second, firms that issue SEOs typically wait one to three years after an IPO. Why then do some act so quickly, i.e., by issuing SEOs within six months of an IPO, a very sensitive time period for existing shareholders?[1] The primary objective of our research is to investigate why some firms issue SEOs quickly after an IPO. While earlier studies have improved our understanding of corporate equity issue decisions, very few have examined the time between an IPO and the first SEO. Our contribution intends to fill this void by focusing on a group of firms that return to the equity market shortly after their IPOs.

The finance literature offers two primary explanations for these early SEO decisions. The first is the market feedback hypothesis, which states that high stock returns after an IPO signal that the marginal return to the project is high, which in turn encourages managers to increase investment by raising additional capital. Jegadeesh, Weinstein and Welch (1993) find that firms experiencing larger post–IPO returns tend to issue SEOs within three years of their IPOs, and that the size of their SEOs are larger. They interpret their results as being consistent with the market feedback hypothesis.

The second explanation is that firms issue an SEO shortly after an IPO to exploit market timing opportunities (also labeled as the overvaluation hypothesis by Myers and Majluf (1984)). According to this hypothesis, stock offering is motivated primarily by a manager's desire to take advantage of an "open financing window" to sell overvalued equity.

[1] See ΔT (days) in Table 1. The period is sensitive because after an initial public offering, most existing shareholders are subject to a lock–up period in which they cannot sell their shares for a pre–specified time.

Overall, we find support for the market timing/overvaluation hypothesis in explaining firms' SEO decisions shortly after their IPOs. The support relies on studying publicly traded firms that issue SEOs within six months of their IPOs. Specifically, we address the following research questions*: 1) Why do firms decide to conduct SEOs rapidly after an IPO? Is it due to good investment opportunities, or is it because these firms are timing equity issues in ways that benefit existing shareholders? 2) How does the market react to the announcement of an SEO following an IPO? 3) What is the long–run stock price performance of firms conducting SEOs shortly after IPOs? 4) What is the operating performance of our sample firms?*

Jegadeesh, Weinstein and Welch (1993) find that firms with larger post–IPO returns are more likely to issue SEOs within three years of their IPOs and suggest that firms experiencing higher aftermarket returns tend to issue SEOs sooner.[2] They interpret their results as being most supportive of the market feedback hypothesis. Yet they overlook the overvaluation hypothesis and some of their results do not support the market feedback hypothesis. Their analysis employs a long (three–year) window. We suggest that a short window is more likely to capture a firm's equity issuance decision soon after its IPO. In addition, we examine the post–issue performance of SEO firms to detect whether managers engage in market timing.

DeAngelo, DeAngelo and Stulz (2010) study the factors determining a firm's decision to issue SEO at a given year and find that near-term cash need is the primary motivation for SEOs. They argue that both market–timing opportunities and a firm's corporate lifecycle (which is defined as the number of years listed) play a statistically significant but only ancillary role in the decision. Our paper differs from theirs by focusing on what factors determine an early SEO right after an IPO.

[2] They study 411 first SEOs issued during 1980–1986. They found similar results when they used a five–year period window.

DeAngelo *et al*. treat the time between an IPO and SEO as exogenous to an SEO issue decision, using the number of years listed as a proxy for a firm's lifecycle. Our analysis differs by treating the time between an IPO and SEO as endogenously determined by firm characteristics and market conditions. To control for the corporate lifecycle hypothesis in explaining a firm's equity issuance decisions, following Loughran and Ritter (2004), we use the number of years since the founding date of the firm as a proxy for a firm's life cycle stage.[3] Our results suggest that the market–timing hypothesis continues to hold after controlling for a firm's life cycle stage.

Our research approach is as follows. First, we address the question of why some firms return to the equity issue market for an SEO earlier than other firms following an IPO. The results indicate that, among firms that issue SEOs, those firms experiencing larger IPO underpricing, larger stock price run–ups after the IPO, with larger IPO issue size, and smaller and younger tend to return to the market with SEOs earlier than the others.

Next, we examine market reaction by analyzing the announcement effect of SEOs. Prior research has generally demonstrated a negative announcement effect upon an SEO announcement (see Asquith and Mullins (1986) and Eckbo and Masulis (1995)).[4] Our study differs in that we compare the announcement effect for firms issuing SEOs within six months of their IPOs and for firms conducing SEOs six months following their IPOs. We find that the market is more surprised by earlier SEO issues after the IPO and that the price decline associated with the SEO announcement is more severe for these firms. Firms issuing an SEO within six months of an IPO earn 2.69% lower abnormal returns over the three–day window surrounding

[3] Loughran and Ritter (2004) define firm age as the year of the IPO minus the year of founding.

[4] Cooney and Kalay (1993) extend the Myers–Majluf framework by introducing the existence of negative NPV projects. They show that an announcement of SEO can contain favorable information about a firm and that a positive price reaction upon the announcement of an SEO is possible. Korajczyk, Lucas and McDonald (1991) report less of a negative announcement effect when an SEO is conducted shortly after a favorable earnings release.

the announcement date than those issuing later. This finding indicates that the market treats SEO announcements taking place shortly after an IPO less favorably, because such issues might signal a greater degree of stock price overvaluation. We argue that the equity issuance decision of these firms is more likely driven by the overvaluation rather than the investment opportunity hypothesis.

Third, we analyze whether the market properly values firms. Specifically, if companies announce stock issues when their stock is grossly overvalued, can the market reevaluate the stock appropriately, or will the stock still be substantially overvalued when the issue occurs? To address this question, we compare the long–term stock returns of firms issuing SEOs in our sample against five alternative matching benchmarks. Consistent with Loughran and Ritter (1995), we find strong evidence of poor performance following equity issuance. The mean three–year buy–and–hold abnormal–return (BHAR) for all SEOs in our sample is –23.13%[5], while firms returning to the equity market within six months of an IPO have a more negative BHAR of –59.97%, compared with a BHAR of –17.54% for firms issuing SEOs after six months of IPOs. If the firms returning to the equity market earlier are more overvalued than the others, then the poorer long–run performance is merely a consequence of the market's failure to incorporate all the information. The stock is still substantially overvalued when such an issue occurs. Current shareholders benefit from a quick SEO, while new shareholders suffer a loss in the long–run.

To evaluate the impact of the timing of SEOs and firm characteristics on the firm's subsequent share performance more thoroughly, we perform multivariate regressions of BHAR on the logarithm of the time between IPO and SEO (or early issue dummy), pre–issue stock–price appreciation, and other control variables. We find that firms' three–year BHAR is positively related to the logarithm of the time between IPO and the first SEO (or negatively

[5] Issuers and non–issuers are matched by size, industry and book–to–market.

related to the early issue dummy), which provides evidence for the poorer long–run performance of firms conducting SEOs shortly after their IPOs.

Beyond the buy–and–hold returns approach, we use other two procedures to examine the underperformance of firms conducting early SEOs. The first procedure uses a time–series of cross–sectional regressions on monthly individual firm returns. The results suggest that firms conducting new issues underperform by 41.5 basis points per month, and firms conducting SEOs within 6 months of IPOs underperform by 111 basis points per month.[6] This evidence suggests that firms conducting SEOs within 6 months of their IPOs experience more severe underperformance.

The second procedure is the calendar–time portfolio analysis. We regress portfolio excess returns on Fama–French's three factors and report the "alphas," which measure the monthly abnormal returns associated with the SEO announcement. In the three–factor regressions, the alphas of non–issuers are larger than the alphas of issuers. For all issuers, the alpha of issuers conducting an SEO more than 6 months after an IPO significantly exceeds that of issuers conducting an SEO within 6 months of an IPO. These results also support the overvaluation hypothesis.

We also consider an alternative hypothesis, the market feedback hypothesis. This hypothesis implies that investments increase with aftermarket returns. Hence, firms issuing SEOs shortly after IPOs should have higher investment rates. Hovakimian and Hutton (2010) examine repeat SEOs and document a positive relationship between the first year post–issue returns and the likelihood of a follow–on equity issuance. They interpret their results as most consistent with the market feedback hypothesis: that a high post–issue return encourages managers to increase

[6] 111 basis points = 41.5 basis points (new issue) + additional 69.5 basis points (issue within 6 months of IPO) as shown in Table 7 Panel (7).

the firm's investment because the marginal return to the project is high. We test this hypothesis by estimating regressions of investment on aftermarket returns, an SEO within 6 months of IPO dummy, as well as the interaction variables between aftermarket returns and the 6 months dummy. Our estimation results are inconsistent with the market feedback hypothesis.

Finally, we examine whether the timing of an SEO affects post–issue operating performance. We find that firms conducting SEOs shortly after an IPO exhibit the most severe decline in operating performance among all the issuing firms. As the inflated stock price cannot be sustained following the IPO, the returns decline, reflecting poor operating performance. This finding is also consistent with the overvaluation hypothesis.

The rest of the paper is organized as follows. Section 2 describes the hypotheses tested in the paper and the data we use for analyses, section 3 discusses the methodology to measure SEO underperformance, section 4 presents the main results, section 5 provides robustness checks of our analyses, and section 6 summarizes.

2. Hypotheses and Data

2.1. Hypotheses

The market feedback hypothesis states that high stock returns signal high marginal returns to the projects, which in turn, encourages managers to increase investment by raising additional capital. The hypothesis therefore predicts:

H.1. Firms with higher aftermarket returns are more likely to issue an SEO more quickly following an IPO than firms with lower aftermarket returns.

The underlying intuition is that firms with high aftermarket returns are high quality firms with good investment opportunities. It is more costly for high–quality firms to defer their investments in new projects than it is for low quality firms.

H.2. The market reacts less unfavorably to the announcement of an SEO by firms that issue the SEO shortly after the IPO.

If firms with good investment opportunities are more likely to issue an SEO shortly after an IPO, the market should be less surprised by SEO announcements by these firms.

H.3. Firms conducting SEOs shortly after their IPOs exhibit relatively better long–run stock performance.

If firms that issue SEOs shortly after IPOs are high–quality firms with good investment opportunities, it is reasonable to assume that these firms will exhibit better long–run stock performance after the issue.

H.4. Investment rates are higher for firms that issue SEOs shortly after IPOs

High aftermarket returns encourage managers to increase the firm's investments because the marginal return to the project is high. Thus, the investment rates should be higher for firms that return to the equity issue market shortly after the IPO.

H.5. Firms conducting SEOs shortly after their IPOs exhibit stronger post–issue operating performance.

The overvaluation hypothesis, in contrast, states that firms issue equity when they believe their stock prices are overvalued relative to management's private information. Thus, market timing hypothesis predicts:

H.1a. Firms with higher aftermarket returns are more likely to issue an SEO more quickly after the IPO than firms with lower aftermarket returns.

Under the overvaluation hypothesis, if managers believe their stocks are overvalued, they tend to issue new equity more quickly after the IPO to take advantage of "windows of opportunity" in ways that benefit existing shareholders.

H.2a. The market reacts more unfavorably to the announcement of an SEO by firms that issue the SEO shortly after the IPO.

The market treats the SEO announcement shortly after an IPO less favorably because such equity issue might signal a greater degree of stock price overvaluation.

H.3a. Firms conducting SEOs shortly after their IPOs experience poorer long–run stock performance.

If the stock prices of firms issuing SEOs shortly after IPOs are even more significantly overvalued than the others, then the poorer long–run performance is merely a consequence of the market's failure to incorporate all the information. The stock is still substantially overvalued when the issue occurs.

H.4a. Investment rates are not necessarily higher for firms that issue an SEO shortly after the IPO.

If a firm's equity issue decision is driven by overvaluation rather than good investment opportunities, investment rates may not be higher for firms conducting an SEO shortly after an IPO.

H.5a. Firms conducting an SEO shortly after going public exhibit no better or even worse post–issue operating performance.

The rationale behind this proposition is that after the issue, as the inflated stock price cannot be sustained, the returns may decline, reflecting poor operating performance.

2.2. Data

We use Thomson Financial's SDC Global New Issues database to identify firms that conduct IPOs during 1970–2006, and then select the first–time SEOs by these firms for the same time period. Our ending date is restricted to2006 so that we have available data from CRSP to compute long-run returns. Our sample satisfy the following criteria: (1) include only common share offers listed on NYSE (the New York Stock Exchange), AMEX (the American Stock Exchange) or NASDAQ; (2) exclude IPOs with offer price≤\$5[7]; (3) exclude IPOs with gross proceeds (in real 1984 dollar) less than \$1 million; (4) exclude financial companies, such as banking, insurance and REITs (SIC codes between 6000–6999) and utility companies (SIC codes 4900–4949); (5) exclude unit offers, spinoffs, carve–outs, rights, and shelf offerings[8]; (6) include only firms with stock return data available in CRSP after the issue, and with financial data available in COMPUSTAT, and (7) exclude firms with a market cap of less than \$10 million during 1970–2006 to minimize the influence of outliers in the analysis. The resulting sample consists of 1,610 first time SEOs.

Table 1 reports summary statistics of firm characteristics and other main explanatory variables used in the paper, with more complete definitions and the COMPUSTAT origins of data presented in the Appendix. **ΔT** is the number of calendar days between IPO and the first SEO. The median value of **ΔT** is about one and half years (496 days). **Under IPO** is IPO underpricing, defined as the difference between the first day post–issue price and the IPO offer price divided by the offer price, with a median underpricing of 8.93%. **AB RET 20** is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date, with a median of 3.79%. **AB RET 40** is the abnormal return over the period from trading day 21 to

[7] Analyses using the offer price<=\$1 yield quantitatively similar results.

[8] A shelf SEO is defined as an SEO whose issue date is 60 days after the filing date. Following Altinkilic and Hansen (2003) and Huang and Zhang (2011), we exclude shelf registered offers.

trading day 40 after the IPO date. The median abnormal return 20 days before SEO issues is 3.59% (not presented in Table 1), indicating the fact that SEO firms experience strong price run–ups prior to the issue. **SEO AR** is the SEO 3–day announcement period abnormal return, calculated over the event days –1, 0, and +1. The median SEO AR is around –3.40%.

Table 1 also reports firm characteristics traditionally used to identify market timing. The median market value of equity for our SEO sample is $277.73 million. The mean is larger at $694.49 million, indicating skewness of distribution. Our sample firms have a median Tobin's Q of 1.91, which suggests that the typical SEO firm is profitable and has valuable growth opportunities. Finally, firms that issue SEOs on average raise 2.08 times as much capital through SEOs as they raise from their IPOs (measured by SEO/IPO).

Figure 1 presents the number of SEOs in our sample by year and the proportion of early SEOs (SEO issued within 6 months of IPO). The volume of SEOs displays large variations over time, with the period 1991–2000 being the "hot" issue period, and we observe a higher proportion of early SEOs during this period as well. Early SEOs account for 10%–30% of all SEOs during this hot issue period.

3. Measuring SEO Underperformance

We use three procedures to examine the underperformance of seasoned equity offerings. The first procedure is the buy–and–hold abnormal return (BHAR) analysis. The second procedure uses a time–series of cross–sectional regressions on monthly individual firm returns. Last, we use the Fama–French three–factor regressions.

3.1. Buy–and–hold abnormal returns

Extensive literature exists about long–run stock performance following corporate events; yet long–term studies on stock returns remain controversial. Following Billett, Flannery and Garfinkel (2005), we calculate buy–and–hold abnormal returns (BHAR) over a three–year holding period after the SEO issue. The BHAR is calculated from the first CRSP–listed post–issue closing price to the appropriate anniversary date of the offering. A firm's holding period return is calculated as:

$$(1) \qquad R_{i,T} = \left[\prod_{t=1}^{T}\left(1 + R_{i,t}\right) - 1\right] \times 100\% \; ;$$

where $R_{i,t}$ is the daily return for firm i, T is the number of trading days in the three–year window following the issue, and $R_{i,T}$ is the cumulative holding period return.

For each issuing firm, we select five separate sets of peer non–issuing firms. Following Vijh (1999), the five alternative sets of matching firms are constructed as follows. The first set controls only for size. Each SEO firm is matched with the non–issuing firm having the closest, but higher, market capitalization on the prior December 31. The second set controls for size and book–to–market. We identify firms whose market value lies between 70% and 130% of the sample firm value. Of those, we select the firm with the closest book–to–market value. The third set controls for size and industry effect. Each sample firm is paired with a peer firm that has the closest market value and the same two–digit SIC code. The fourth set controls for size and earnings–to–price effect. We identify firms whose market value lies between 70% and 130% of the sample firm value, and then select the firm that has the closest earnings–to–price value. The last set controls for size, industry and book–to–market. Our reported results are mainly based on the last set, the most refined method of matching.

Following the existing literature, in our calculation, if a matching firm is delisted before the three-year anniversary date of the offering, the next closest matching firm's return is used. Up to four matching firms are kept for each SEO firm in the sample. If sample firms are delisted, the BHAR is calculated until the delisting date, and the corresponding matching firm's return is used. The BHAR is the difference between the holding period return for each sample firm and its matching firm.

3.2. Cross–sectional regressions on monthly returns

Our second procedure for measuring SEO underperformance uses a time–series of cross–sectional regressions based on monthly individual firm returns. We run cross–sectional regressions on all firms listed on NASDAQ, AMEX, or NYSE during 1970–2006 as follows:

$$(2) \quad r_{it} = a + b \ln MV_{it} + c \ln B/M_{it} + d\, ISSUE_{it} + e\, ISSUE6month_{it} + \varepsilon_{it};$$

where ln*MV* is the natural logarithm of the market value of equity (MV EQ), ln*B/M* is the natural logarithm of the ratio of the book value of equity to the market value of equity, and the book value is the book value of equity for the most recent fiscal year end. ISSUE is a dummy variable which equals one if a company conducted at least one public equity offering (SEO or IPO) within the 60 months preceding a given June 30th. ISSUE6month is a dummy variable which equals one if a company conducted an SEO within 6 months of its IPO. The dependent variable is the monthly percentage of stock returns. This procedure allows us to test whether there is an independent "new issues effect" and whether firms conducting SEOs within six months of IPOs experience more severe underperformance.

3.3. Fama–French three–factor regressions

Buy–and–hold returns may be more important for an individual, naive investor who makes infrequent portfolio allocation choices. Large institutional investors, however, trade quite

frequently, and monthly portfolio rebalancing may be the relevant benchmark. Therefore, our third approach is to compute the calendar time abnormal return and compare with the buy–and–hold abnormal returns. Barber and Lyon (1996), Kothari and Warner (1997), and Lyon, Barber, and Tsai (1999) suggest unbiased statistical significance levels are difficult to compute using buy–and–hold returns. Consequently, starting with Loughran and Ritter (1995), the long–run returns literature has commonly used three–factor time–series regressions, introduced by Fama and French (1993), of the form:

$$(3) \qquad \left(R_{pt} - R_{ft}\right) = a + b\left(R_{mt} - R_{ft}\right) + sSMB_t + hHML_t + \varepsilon_t \ ;$$

where R_{pt} is the equally weighted portfolio returns of sample firms in month *t*; R_{mt} is the return on the equally–weighted index of NYSE, AMEX, and NASDAQ stocks in month *t*; R_{ft} is the three–month T–bill yield in month *t*; SMB_t is the return on small firms minus the return on large firms in month *t*, and HML_t is the return on high book–to–market stocks minus the return on low book–to–market stocks in month *t*. The intercepts from these regressions are interpreted as abnormal returns. Abnormal returns will be associated with the event studied if the intercepts in the regressions are economically and statistically significant.

4. Results

4.1. Why do some firms return to the equity market earlier than the others?

We begin our analysis by examining why some firms return to the equity issue market earlier than the others. Results are presented in Table 2. We first focus on what kind of firms is more likely to issue SEOs within 6 months of IPO. To address the concern that the "6 months" classification of "early" issue is "arbitrary," we also use a continuous variable **LnΔT**, defined as the logarithm of the time between a firm's IPO and its first SEO, as a dependent variable. To

address the concern that the IPO/SEO market may have changed over time (Loughran and Ritter, 2004) regarding types of issuers, incentives of issues and market conditions, we run the analyses for both the full sample (1970–2006) and subsample (1990-2006).

According to the overvaluation hypothesis, if managers believe their stocks are overvalued, they tend to issue new equity to take advantage of "windows of opportunity" in ways that benefit existing shareholders. If this hypothesis holds, we should find that firms go back to market earlier when they experienced higher IPO aftermarket abnormal returns.

Our probit regression shows that firms with larger IPO underpricing (**Under IPO**) are more likely to conduct an "early" issue. This is consistent with the signaling hypothesis of IPOs by Chemmanur (1993) and Welch (1989), which proposes that firms underprice their IPOs so that they can subsequently issue seasoned equity at a favorable price, and can return more quickly to the equity market with SEOs. The coefficients of AB RET 20 and AB RET 40 are also positively significant, suggesting that firms experiencing larger stock price run–ups after the IPO tend to return to the market with an SEO earlier than the others. Since large pre–issue stock price appreciation signals that the current stock price is overvalued, the above results are consistent with the hypothesis that management use their private information to time equity offerings to take advantage of the "windows of opportunity." The associated coefficient estimates on firm size and firm age are all significantly negative, suggesting that larger firms and older firms are less likely to conduct a quick SEO (t<6 months) after an IPO.

Similar results are found in regressions on the length of time between an IPO and the first SEO. In addition to taking advantage of overvalued stocks, the results also show that firms with higher expenditure ratio and higher operating performance (ROA) return to the equity issuance market more quickly. These variables are not significant in the "quick SEO" probit regression.

The results for subsample are mostly consistent with the full sample analyses. Overall, we conclude that firms' decisions to issue "quick SEOs" are driven by market timing rather than broader economic considerations.

4.2. Market reaction

Prior research generally shows a negative announcement effect upon the announcement of an SEO (Loughran and Ritter, 1995; Houston and Ryngaert, 1997; Jegadeesh, Weinstein and Welch, 1993).[9] We extend the existing literature by examining the relations between the timing of SEOs and SEO announcement effects. Specifically, we address whether or not the market is more surprised by firms that conduct their SEOs comparatively earlier following their IPOs. If the market timing hypothesis holds, we expect to find a less favorable market response because an earlier SEO issue may signal a greater degree of stock overvaluation. To address this question, we report the abnormal returns around SEO announcements categorized by length of time since the IPO at the date of the first SEO in Panel A of Table 3.

Consistent with the market timing hypothesis, we find that the price decline associated with SEO announcement is more severe for the group of firms conducting SEOs within 6 months of their IPOs (with an SEO 3–day announcement period abnormal return of –5.79%). Panel B of Table 3 shows the difference test between the groups of firms issuing "quick SEOs" and firms whose SEO takes place more than six months after an IPO. Based on the t-test and Wilcoxon test, the differences in the SEO 3–day announcement–period abnormal return are statistically significant at 1% level. Table 3 also shows that among the seven groups of firms classified by the timing of SEOs, the group of firms conducting "quick SEOs" (t < 6 months) experience the

[9] Literature has documented on average a –3% SEO announcement abnormal return, followed by another –3% SEO issue day abnormal return. Loughran and Ritter (1995) find that SEO firms underperform size and industry matched non–issuance firms over the five years following SEOs.

largest AB RET 20 (22.29%) and AB RET 40 (11.39%). This finding confirms our results in Table 2, indicating that firms with higher stock price run–ups after the IPO tend to return to the market with an SEO earlier than the others.

To provide an additional test of the hypothesis that the market might be more surprised by SEO announcements shortly after IPOs, we conduct a regression analysis with the dependent variable being the SEO 3–day announcement abnormal returns, and the key independent variables being either a dummy variable which equals one if the number of calendar days between IPO and the first SEO is less than 6 months (6 months dummy) or a continuous variable representing the time difference between IPO and first SEO ($\ln\Delta T$). The results are presented in Table 4. The coefficient of the six months dummy is negative and significant for all sample periods, suggesting that the market is more surprised by "quick SEOs" and that the price decline associated with the SEO announcement is more severe for these firms. The interaction between market overvaluation (AB RET 20) and SEO within 6 months of IPO dummy is negative and significant for the full sample period and the 1990–2006 period. The decision to issue equity for these firms appears to be driven more by overvaluation rather than by investment opportunities. Hence, there is a more negative market reaction when good motivations are not apparent. The regression with continuous days ($\ln\Delta T$) also shows that firms waiting longer to return to equity issue market generally experience higher announcement abnormal returns.

4.3. Buy–and–hold abnormal returns analysis

Table 5 reports the three–year buy–and–hold abnormal returns for the sample firms between 1970 and 2006. Consistent with prior studies, firms announcing SEOs underperform their size, industry and book–to–market matched counterparts. The mean BHAR is –23.13% and is reliably different from zero. Similar results are obtained for the other four alternative sets of

matching firms, based on 1) size alone, 2) size and book–to–market, 3) size and two–digit SIC code, and 4) size and earnings–to–price ratio. The poor long–run performance suggests that the market does not fully react to the information implied by an equity issue announcement, because only part of the overvaluation problem is corrected upon the announcement of an equity issue.

Next, in Panel A of Table 5, we report the BHAR as categorized by the length of time since IPO at the date of first SEO. Among the seven groups of firms classified by the timing of SEOs, the group of firms conducting "quick SEOs" ($t < 6$ months) experiences the most severe long–run underperformance, as shown using size, industry and book–to–market matched benchmarks. Panel B of Table 5 shows the difference test between the groups of firms whose SEO is within six months of IPO and whose SEO is after six months. Using size, industry and book–to–market matched peer firms, firms returning to the equity market within six months of IPO experience a three–year BHAR of –59.97%, while firms conducting SEOs after six months of IPOs experience a BHAR of –17.54%. The difference in the BHAR between the two groups of firms is negative and statistically significant ($p=0.035$).

To evaluate the impact of SEO timing and firm characteristics on a firm's subsequent share performance in more detail, we run multivariate regressions of BHAR with the key explanatory variables being "quick SEO" dummy (the six months dummy) or the logarithm of the time between a firm's IPO and its first SEO ($\ln\Delta T$). Table 6 reports the regression results. We find that firms issuing "quick SEOs" experience lower BHAR for the full sample period 1970–2006 and the subsample period 1990–2006. In general a longer waiting time between an IPO and the first SEO ($\ln\Delta T$) is associated with better ex post peer–adjusted, long–term stock returns. This result provides further evidence about the poorer long–run performance of firms conducting SEOs shortly after their IPOs. If the stock prices of firms issuing SEOs shortly after

IPOs are significantly more overvalued than the others, then the poorer long–run performance is merely a consequence of the market's failure to incorporate all the information from the announcement of an SEO. The stock is still substantially overvalued when the issue occurs.

4.4. Cross–sectional regressions on monthly returns

To test whether there is a "new issues effect" independent of a more severe underperformance of firms conducting SEOs within six months of IPOs, we perform a time–series of cross–sectional regressions on monthly individual firm returns following Loughran and Ritter (1995). Table 7 presents the multivariate analysis of monthly firm returns under seven different model specifications. The key variables we examine are "ISSUE" and "ISSUE 6 month". In the full model (7), the coefficients of ISSUE and ISSUE6month indicate that firms conducting new issues underperform by 41.5 basis points per month, and firms conducting SEOs within 6 months of an IPO underperform by additional 69.5 basis points per month. In model (2), we report the average coefficients for monthly regressions where the sole explanatory variable is the new issue dummy variable. The mean parameter value of –0.47 indicates that firms conducting new issues subsequently underperform by 47 basis points. In model (3), where the only explanatory variable is the ISSUE 6 month dummy, the coefficient estimate of –0.968 implies that firms conducting SEOs within 6 months of IPOs subsequently underperform by 96.8 basis points. In model (4), when we consider both the new issues effect and the effect of SEOs within six months of IPOs, issuing firms conducting SEOs within 6 months of IPOs underperform by 64.9 basis points. The results in model (4) and model (7) imply that the underperformance of new issues cannot be solely attributed to the size and book–to–market effects. Instead, a "new issues effect" exists, demonstrating that issuing firms underperform

non–issuing firms, and that firms conducting SEOs within 6 months of their IPOs experience more severe underperformance.

4.5. Fama–French three–factor regressions

Table 8 reports the alphas from time–series regressions of monthly portfolio excess returns on Fama–French three factors, as used in Fama *et al*. (1993). The advantage of forming portfolios is that the cross–sectional dependence problem in Table 7 is reduced while the disadvantage is that power is sacrificed.

We find that for all firms, the alphas of non-issuers exceed those of issuers by 0.50 on the monthly basis, and the difference is statistically significant at the 1% level (Panel A). We split the sample into large firms and small firms. Large firms are those whose market capitalization is above the size of the median NASDAQ, AMEX and NYSE firm in the sample. We find that for small firms, the alphas of non-issuers are significantly higher than that of issuers.

We also form portfolios of firms issuing an SEO both within 6 months of an IPO (quick SEO) and more than 6 months following an IPO (Panel B). The results show that for all issuers, the alpha of firms conducting an SEO more than 6 months following an IPO exceeds that of quick SEO issuers by 1.09 on monthly basis. We find negative differences when we split the sample into large and small issuers, though the differences are not statistically significant. Overall, we find underperformance of issuers and more severe underperformance of those with "quick SEOs". This evidence again supports the hypothesis that firms take advantage of "windows of opportunity" by issuing equity when they are substantially overvalued.

4.6. Aftermarket returns and investments

According to the market feedback hypothesis, high stock returns signal that the marginal return to the project is high, which encourages managers to increase investment by raising

additional capital. Therefore, firms issuing SEOs shortly after IPOs should have higher investment rates. We test this hypothesis by estimating regressions of investment (measured by total net property, plant and equipment, following Hovakimian and Hutton (2010)) [10] on aftermarket returns, 6 months issue dummy or the logarithm of the time between a firm's IPO and its first SEO ($\ln\Delta T$), and the interaction variables between aftermarket returns and the 6 months dummy. We also include control variables such as book–to–market, free cash flow and other firm characteristics. Results reported in Table 9 are inconsistent with the market feedback hypothesis. The coefficient estimates on AB RET 20 and SEO within 6 months of IPO dummy are negative and significant for the full sample period and the period of 1990–2006, instead of being positive. The coefficients of the interacted terms are statistically insignificant from zero. Overall, we find no evidence that capital expenditures increase with the aftermarket returns for firms that conduct SEOs within 6 months of IPOs.

4.7. Changes in operating performance

Finally, we examine the operating performance of firms conducting SEOs by addressing the questions: (1) does the post–issue operating performance of issuers deteriorate relative to non–issuing firms? and (2) is there more severe deterioration of operating performance among the group of issuers who conducted SEOs shortly after IPOs? Table 10 presents the results.

Table 10 reports the median operating performance ratios for issuers and non–issuers matched on industry and pre–issue operating performance. The matching procedure follows Barber and Lyon (1996). We report the results based on the median OIBD (Operating Income before Depreciation) scaled by assets. To examine whether the timing of an SEO affects post–issue operating performance, we categorize the issuing firm by the length of time since IPO at

[10] We find similar results when using the measure of change of a firm's capital expenditure ratio as the dependent variable.

the date of the first SEO: early issuer (an SEO issued within 6 months of an IPO) vs. late issuer (an SEO issued more than 6 months following an IPO).

We find that for early issuers, there is deterioration in operating performance for the median issuer relative to the median non–issuer during the years after the offer, which is consistent with the findings of Loughran and Ritter (1997).[11] The deterioration from year –1 to year 3 is statistically significant at conventional levels. However, the median late issuer demonstrates a slightly better operating performance than the median non–issuer two or three years after the offer. For late issuers, the median benchmark–adjusted OIBD to assets from year –1 to year 3 is 0.78%. In contrast, the median benchmark–adjusted OIBD to assets for early issuers from year –1 to year 3 is –4.07%. The difference between early issuers and late issuers is statistically different. Again, our results indicate that firms conducting an SEO shortly after going public exhibit the most severe decline in operating performance among all the issuing firms.

5. Robustness checks[12]

5.1. Impact of lockup period and firm performance

Existing literature has documented that many IPOs specify a lockup period for future equity issues, and in general, most lockup restrictions expire 6 months after the IPO (Field and Hanka, 2002). Chen, Chen, and Huang (2012) find that insiders' (especially senior executives) selling of shares has a negative impact on the long-run stock returns subsequent to the lockup expiration. To test the impact of lockup days, we perform univariate and regression analyses.

[11] Loughran and Ritter (1997) find that the operating performance of issuing firms shows substantial improvement prior to the offering, then deteriorates.
[12] Complete robustness results are available from the authors upon request.

We find that the mean and median lockup period of early issuers are 190 days and 180 days, respectively, not significantly different from the mean and median lockup period of late issuers (179 days and 180 days). To examine the impact of lockup period on SEO firm performance, we further control for the lockup period in the announcement return and buy–and–hold abnormal return regression analyses. We find no impact of lockup period on the more negative performance of SEOs issued within 6 months of IPOs.

5.2. Impact of secondary shares offering, venture–capital backed offerings, and high–tech industry

For SEO issues, the shares offered may include pure primary shares (newly created shares that generate proceeds for the firms), pure secondary shares (insider's shares that do not increase the cash holdings of firms) or a mix of both. We perform several robustness checks to test whether our results are driven by secondary shares offerings.

In the univariate analysis, we find that for early issuers, 18% (39 firms) are pure secondary offerings, 69% (147 firms) are mixed offerings (60% of which (89 firms) with primary shares less than 50% of total offers); for late issuers, 13% are pure secondary offerings, 54% are mixed offerings (32% of which with primary shares less than 50% of total offers). We define pure secondary offerings or mixed offers with primary shares less than 50% as “second”. For early issuers, 60% of firms are “second”, and for late issuers, 30% of firms are “second”. The difference is significant at 1% level.

The first robustness check we perform is to exclude pure secondary offerings from our sample, that is, we only keep firms with at least some newly issued (primary) shares (Loughran and Ritter, 1995). We re–run all the analyses performed in the paper, and reach exactly the same conclusion. However, secondary offerings may signal additional information for the firms,

especially when insiders have an incentive to cash out as early as possible following an IPO. Therefore, we perform another set of robustness check by controlling for "second" offerings (a dummy variable equal to one if an SEO is pure secondary offering or if an SEO has at least 50% shares offered being secondary) in various multivariate analyses. The market timing story still holds and we find that early issuers (defined by 6 month dummy or $\ln\Delta T$) continue to experience more negative announcement abnormal returns and lower long–run BHARs after controlling for offering type.

It is also possible that if an IPO is venture capital (VC) based, the existing owners may desire to exit via secondary shares as early as possible (Brav and Gompers, 1997). To test this hypothesis, we tabulate the percentage of VC–backed IPOs for early issuers and late issuers. We find that 66.82% of early issuers are backed by venture capital while 49.07% of late issuers are backed by venture capital. The difference is significant at the 1% level. We then control for VCs, and the interaction of VCs and secondary offering type in aProbit regression to assess the decision to conduct an SEO. We find that VC dummy is not significant in the regressions, but VC backed secondary offerings are conducted sooner than non–VC backed secondary offerings. The key market timing opportunities variables, IPO underpricing, AB RET 20, and AB RET 40, remain significant after controlling for VCs and offerings type.

Another concern is high–tech/internet firms, the stock of which may behave differently as shown by the literature.[13] Loughran and Ritter (2004) find that riskier IPOs offered by high–tech firms are more underpriced than less–risky IPOs. Bartov et al.(2002) document differences in IPO valuations between internet and non–internet firms as well as across different stages in the IPO process. In our sample, 38.32% of early issuers are high tech/internet firms while 21.56%

[13] We follow Loughran and Ritter (2004) and Cliff and Denis (2004) to categorize firms with the following SIC codes as tech firms: 2833, 2834, 2835, 2836, 3571, 3572, 3575, 3577, 3578, 3661, 3663, 3669, 3674, 3812, 3823, 3825, 3826, 3827, 3829, 3841, 3845, 4812, 4813, 4899, 7370, 7371, 7372, 7373, 7374, 7375, 7377, 7378, and 7379.

late issuers are high tech/internet firms. In the subsample, about 26% of IPO issuers are high tech firms during 1990–2006 (about 33% of IPO issuers are high tech firms during 1995–2000). We include a high–tech firm dummy variable in the regression analyses and find: (1) high–tech firms do not necessarily come back to equity issue market earlier than others (the coefficient estimate is not statistically significant) after controlling for other firm characteristics; (2) high–tech firms do not experience greater negative SEO 3–day announcement abnormal returns (coefficient estimate is not statistically significant); (3) high–tech firms do not exhibit more negative long–run returns (coefficient estimate is not statistically significant). The coefficient estimates for our key market–timing variables are still significant after controlling for high–tech firms in the regressions. We also perform the univariate analyses as shown in table 5, with separate analyses for non–high–tech firms and high–tech firms by early issue and late issue. For both high tech and non–high–tech firms, early issuers demonstrate more negative BHAR than late issuers. However, there is no significant difference in BHAR between non–high–tech firms and high–tech firms categorized by either early issuers or late issuers.[14]

5.3. Cash needs and the possibility of early SEO issue

Recent literature suggests that firms issue SEOs for precautionary reasons. That is, firms issue equity to save cash. McLean (2011) reports that in the 1970s, issuing firms generated $0.23 in cash savings for every $1.00 issued, but in the 2000s, the cash savings increased to $0.60. DeAngelo, DeAngelo and Stulz (2010) also state that the near–term cash need is the primary motivation for SEOs. They find that firms with higher cash needs are more likely to issue SEOs. Our analyses do not preclude the cash need motivation. However, since we focus on the timing of a firm returning quickly to the equity issuance market after its IPO, cash needs around an SEO may not be a valuable explanatory variable. That is, we believe near–term cash need around SEO

[14] All the results are available from authors upon request.

is a powerful factor determining whether a firm issues an SEO or not, but it may not predict or explain why some firms issue sooner than others.

Nonetheless, we address this concern by performing two analyses. First, following DeAngelo, DeAngelo and Stulz (2010), we measure a company's near–term cash needs as: Pro Forma Cash/TA ratio = (Cash $_{t+1}$– SEO proceeds from primary shares)/(Total Assets $_{t+1}$ – SEO proceeds from primary shares), and add the variable to the Probit regression. As predicted, this variable carries no explanatory power regarding early issue or late issue. The market–timing hypothesis still holds after controlling for a company's cash saving needs. Second, we consider the counterfactual condition that had there been no SEO issue, would a firm run out of cash. We find that for early issuers, about 68.4% of firms would have run out of cash without the issue, and that 67.7% of the late issuers would have run out of cash. The difference is statistically insignificant.

6. Conclusion

Our research investigates whether firms take advantage of transitory "windows of opportunity" to time seasoned equity issues when their equity is substantially overvalued with respect to managers' private information, i.e., the overvaluation hypothesis. Our main results provide support for this hypothesis. First, we find that firms experiencing larger IPO underpricing, larger stock price run–ups after the IPO, and larger IPO offer size tend to return to the market with an SEO earlier than the others. This implies that overvalued firms tend to time their equity issues. Second, we find that firms issuing SEO within six months of IPO on average earn a 2.69% lower three–day announcement excess return than those issuing six months or more

following an IPO, indicating that the market treats SEO announcements shortly after IPOs as less favorable because such equity issues might signal a greater degree of stock price overvaluation.

Third, we show that firms' three–year BHAR is positively related to the logarithm of the time between IPO and the first SEO. Using three different approaches (the buy–and–hold analysis, cross–sectional regressions, and calendar time portfolio analysis) we document more severe underperformance of firms conducting SEOs within six months of their IPOs. The results hold after controlling for the effects of firm age, secondary share offerings, lockup period and venture capital based nature of IPOs. In addition, we find no evidence that investments increase with aftermarket stock returns for firms conducting SEOs within 6 months of IPOs, which is inconsistent with the market feedback hypothesis. Our results also suggest that firms conducting SEOs shortly after their IPOs exhibit the most severe deterioration in operating performance among all the issuing firms.

In general, the combined evidence is consistent with the overvaluation hypothesis that managers with private information time SEOs in ways that benefit existing shareholders. We find little support for the market feedback hypothesis, which assumes that firms issuing SEOs shortly after IPOs are high–quality firms with good investment opportunities. Firms returning to the equity market shortly after their IPOs are worse off in terms of announcement market reaction, long–run share returns, and operating performance because their stocks are even more overvalued; therefore, management is able to time the market by issuing overvalued equities to take advantage of the "windows of opportunity."

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Table 1
Descriptive Statistics for Sample SEO firms

Description	Mean	Median	Min.	Max	Std. Dev.	N
Market value ($M)	694.49	277.73	10.02	40098.59	2101.12	1610
Total Assets ($M)	405.55	162.18	5.62	22384.00	1040.07	1610
Book–to–market (B/M)	0.46	0.38	–25.80	9.22	0.85	1610
Tobin's Q	2.67	1.91	0.29	48.84	2.67	1610
ROA	0.05	0.12	–3.65	0.73	0.26	1598
CAP EXP RATIO	0.09	0.06	0.00	0.79	0.10	1589
FCF ($M)	0.09	0.14	–26.34	227.69	5.89	1598
IPO SIZE ($M)	53.61	32.90	1.60	2745.50	96.16	1610
SEO SIZE ($M)	82.45	50.70	0.70	1292.20	110.39	1610
SEO/IPO	2.08	1.54	0.02	29.81	2.17	1610
SEO/MV EQ	0.30	0.18	0.00	16.51	0.59	1610
ΔT (days)	898.67	496.00	64.00	9290.00	1051.48	1610
UNDER IPO	21.65%	8.93%	–22.79%	458.41%	41.79%	1608
AB RET 20	6.44%	3.79%	–95.18%	176.09%	21.64%	1610
AB RET 40	3.94%	2.43%	–72.05%	119.10%	18.45%	1610
SEO AR	–3.46%	–3.40%	–40.00%	49.39%	7.48%	1610
Age	16.38	10.00	1.00	166.00	19.45	1591

Note: The sample consists of all firms listed on NASDAQ, AMEX, or NYSE that conducted both IPO and SEO during calendar years from 1970–2006, after applying our sample screening criteria. Market value is price multiplied by the number of shares outstanding. B/M is the ratio of book value of equity to market value of equity. Tobin's Q is the ratio of total market value of assets to total book value of assets. ROA is the OIBD (Operating Income before Depreciation) normalized by total assets. CAP EXP RATIO is capital expenditure to total assets. FCF is the free cash flow, defined as net income after tax plus depreciation less common and preferred dividends, deflated by the firm's beginning–of–year capital. IPO SIZE is the amount of capital raised in the IPO. SEO SIZE is the amount of capital raised in the SEO. SEO/IPO is SEO size as a fraction of capital raised in the IPO. SEO/MV EQ is SEO size as a fraction of market value of equity. ΔT is the number of calendar days between IPO and the first SEO. UNDER IPO is IPO underpricing, defined as the difference between the first post–issue price and the IPO offer price divided by the offer price. AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. SEO AR, the SEO 3–day announcement period abnormal return, is calculated using market model over the event days –1, 0 and +1, where day 0 is the filing date. Age is the number of years since the founding date of the firm to the year issuing SEO.

Table 2
Firm Characteristics and Early SEO

	Ln ΔT		Likelihood of an Early SEO	
	Full Sample (1970–2006)	Subsample 2 (1990–2006)	Full Sample (1970–2006)	Subsample 2 (1990–2006)
UNDER IPO	–0.299***	–0.317***	0.477***	0.425***
	[0.064]	[0.065]	[0.119]	[0.121]
Ln IPO SIZE	–0.347***	–0.283***	0.439***	0.413***
	[0.038]	[0.043]	[0.091]	[0.100]
AB RET 20	–0.871***	–0.797***	1.488***	1.436***
	[0.103]	[0.108]	[0.212]	[0.219]
AB RET 40	–0.633***	–0.597***	1.075***	0.993***
	[0.114]	[0.119]	[0.231]	[0.238]
Tobin's Q	–0.002	–0.002	–0.005	–0.005
	[0.008]	[0.008]	[0.015]	[0.016]
CAP EXP RATIO	–0.678***	–0.829***	0.823	0.721
	[0.240]	[0.280]	[0.530]	[0.616]
FCF	–0.024	–0.007	0.041	0.035
	[0.017]	[0.018]	[0.036]	[0.036]
Ln(Total Assets)	0.228***	0.182***	–0.196***	–0.182***
	[0.028]	[0.030]	[0.063]	[0.066]
ROA	–0.332***	–0.321***	0.135	0.077
	[0.111]	[0.117]	[0.250]	[0.258]
AGE	0.007***	0.006***	–0.009***	–0.011***
	[0.001]	[0.001]	[0.003]	[0.004]
Intercept	6.878***	5.663***	–6.158	–5.925
	[1.008]	[0.692]	[126.182]	[104.491]
Industry and year dummies	Not reported	Not reported	Not reported	Not reported
Sample size	1,532	1,169	1,532	1,169
Adjusted R^2	0.303	0.212		
p–value of regression			0.0000	0.0000

Note: This table reports (1) the cross–sectional regression of the logarithm of time between IPO and the first SEO. The dependent variable is the logarithm of the time between the IPO and the first SEO (Ln ΔT), and (2) probit regression of the factors leading to an early SEO after IPO. The dependent variable is a dummy variable with value equal to **one** when an SEO is issued **within** six months of IPO and zero otherwise. The independent variables include: UNDER IPO is IPO underpricing, defined as the difference between the first post–issue price and the IPO offer price, divided by the offer price. Ln IPO SIZE is the logarithm of IPO size (the amount of equity capital raised in the IPO). AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. Tobin's Q is the ratio of total market value of assets to total book value of assets. CAP EXP RATIO is capital expenditure scaled by total assets. FCF is the free cash flow, defined as net income after tax plus depreciation less common and preferred dividends, deflated by the firm's beginning–of–year capital. ROA is the OIBD (operating income before depreciation) normalized by total assets. AGE is the number of years since the founding date of the firm to the year issuing SEO. The independent variables also include dummy variables for industry and the year of SEO. Standard errors are listed in brackets. *, **, and *** denote significance level at the 10%, 5%, and 1% levels.

Table 3
SEO Three–day Announcement Period Abnormal Returns, AB RET 20, and AB RET 40

Panel A: Abnormal returns categorized by length of time since IPO at the date of first SEO

Time (*t*) between IPO and SEO	N	SEO AR (%)	AB RET 20 (%)	AB RET 40 (%)
(1) $t < 6$ months	214	–5.79	22.29	11.39
(2) 6 months $\leq t < 1$ year	428	–3.67	8.38	5.91
(3) 1 year $\leq t < 2$ years	379	–2.59	2.59	2.40
(4) 2 years $\leq t < 3$ years	185	–2.63	2.37	0.82
(5) 3 years $\leq t < 4$ years	115	–2.82	1.26	0.06
(6) 4 years $\leq t < 5$ years	82	–3.97	1.75	0.63
(7) $t \geq 5$ years	207	–3.10	1.44	1.25
Sample Size/Averages	1,610	–3.46	6.44	3.94

Panel B: Difference tests

	< 6 months		≥6 months		Difference Tests [p – value]	
	Mean	Median	Mean	Median	T– test	Median Test
SEO AR (%)	–5.79	–5.34	–3.10	–3.17	[0.00]***	[<0.001]***
AB RET 20	22.29	14.63	4.01	2.43	[0.00]***	[<0.0001]***
AB RET 40	11.39	11.80	2.80	1.74	[0.00]***	[<0.0001]***

Note: The SEO AR (3–day announcement period abnormal return) is calculated using standard market model over the event days –1, 0 and +1, where day 0 is the filing date. AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. They are calculated by subtracting the market index from the returns at time t. *p*–values are in the brackets. *, **, and *** denote significance level at the 10%, 5%, and 1% levels.

Table 4
Regression of the SEO Three–day Announcement Period Abnormal Returns

	6 Months Dummy		Ln ΔT	
	Full Sample (1970–2006)	Subsample 2 (1990–2006)	Full Sample (1970–2006)	Subsample 2 (1990–2006)
UNDER IPO	0.037	-0.444	-0.230	-0.514
	[0.698]	[0.750]	[0.693]	[0.748]
Ln (SEO/IPO)	0.276	0.372	0.183	0.283
	[0.235]	[0.291]	[0.239]	[0.293]
AB RET 20	0.278	-0.275	-0.457	-1.324
	[1.061]	[1.215]	[1.001]	[1.117]
AB RET 40	-0.745	-1.669	-0.095	-1.127
	[1.171]	[1.323]	[1.110]	[1.237]
6 months dummy or Ln ΔT	-1.723**	-1.362*	0.524***	0.711***
	[0.724]	[0.798]	[0.186]	[0.237]
AB RET 20× 6 months	-6.033**	-6.215**		
	[3.048]	[3.160]		
AB RET 40× 6 months	4.428	2.657		
	[3.449]	[3.693]		
Tobin's Q	0.007	-0.057	0.023	-0.043
	[0.076]	[0.080]	[0.077]	[0.080]
ROA	0.044	-0.103	-0.019	0.099
	[1.020]	[1.130]	[1.020]	[1.129]
CAP EXP RATIO	2.819	2.127	2.709	1.951
	[1.732]	[2.064]	[1.736]	[2.065]
Ln(Total Assets)	0.490***	0.541***	0.485***	0.515***
	[0.160]	[0.187]	[0.160]	[0.187]
FCF	-0.049	-0.065	-0.045	-0.072
	[0.183]	[0.203]	[0.183]	[0.203]
AGE	0.000	-0.007	-0.001	-0.007
	[0.007]	[0.008]	[0.007]	[0.008]
Intercept	-2.414	-5.347	-6.105	-9.569**
	[6.638]	[3.885]	[6.696]	[4.176]
Industry and year dummies	Not reported	Not reported	Not reported	Not reported
Sample size	1,532	1,169	1,532	1,169
Adjusted R^2	0.0217	0.0305	0.0167	0.0287

Note: The dependent variable is the SEO 3–day announcement period abnormal returns in percentages (SEO AR). The SEO 3–day announcement period return is calculated over the event days –1, 0, and +1, where day 0 is the filing date. 6 months dummy (SEO within 6 months of IPO) is a dummy variable that takes on the value of 1 if the number of calendar days between IPO and the first SEO is less than 6 months. Ln ΔT is the logarithm of the number of calendar days between IPO and the first SEO. UNDER IPO is IPO underpricing. AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. Tobin's Q is the ratio of total market value of assets to total book value of assets. ROA is the OIBD (operating income before depreciation) scaled by total assets. CAP EXP RATIO is capital expenditure scaled by total assets. Ln (SEO/IPO) is the logarithm of the relative size of the SEO and IPO. AGE is the number of years since the founding date of the firm to the year issuing SEO. The independent variables also include dummy variables for industry and the year of SEO. Standard errors are listed in brackets. *, **, and *** denote significance level at the 10%, 5%, and 1% levels.

Table 5
The Long–Run Performance of SEOs by Length of Time between IPO and First SEO

Panel A: BHAR

Time (*t*) between IPO and SEO	3–Year Mean Buy–and–Hold Abnormal Returns %				
	Size alone	Size and book–to–market	Size and SIC	Size and earnings–to–price ratio	Size, SIC and book–to–market
(1) $t < 6$ months	–51.80	–68.98	–37.89	–22.53	–59.97
(2) 6 months $\leq$ t < 1 year	–16.87	–32.27	–9.45	–24.22	–24.81
(3) 1 year $\leq$ t < 2 years	–20.04	–22.72	–19.34	–22.68	–11.85
(4) 2 years $\leq$ t < 3 years	–4.54	–23.55	–12.99	–16.55	–23.86
(5) 3 years $\leq$ t < 4 years	–17.39	–32.61	–25.17	–14.34	–25.42
(6) 4 years $\leq$ t < 5 years	–4.05	–3.90	4.79	–6.32	–19.01
(7) t $\geq$ 5 years	–9.65	–9.87	–9.19	–18.90	–2.44
(8) All SEOs (1970–2006)	–19.27	–29.53	–16.31	–20.46	–23.13

Panel B: Difference tests on BHAR

Time (*t*) between	3–Year Mean BHR (%)			
IPO and SEO	N	SEOs	Matching firms	BHAR (%)
(1) $t < 6$ months	208	–12.09	47.88	–59.97
(2) t$\geq$ 6 months	1370	21.48	39.01	–17.54
Difference Tests (p–value)				[0.035]**

Note: The sample of first seasoned equity offering during 1970 to 2006 is categorized by the length of time since IPO at the date of SEO. BHAR is the abnormal return defined as the difference between a sample firm's BHR and its matching firm's BHR. We use five sets of matching firms. The first set controls for size. The second controls for size and book–to–market. The third set controls for size and industry effect. The fourth set controls for size and earnings–to–price effect, and the fifth set controls for size, industry, and book–to–market. Panel A reports BHAR using the five alternative matching procedures. Panel B presents the difference tests on BHAR (matched by size, SIC and B/M). *p*–values are in brackets. *, **, and*** denote significance level at the 10%, 5%, and 1% levels.

Table 6
Regression Analysis of Three–Year Buy–and–Hold Abnormal Return (BHAR) of SEOs

	6 Months Dummy		Ln ΔT	
	Full Sample (1970–2006)	Subsample 2 (1990–2006)	Full Sample (1970–2006)	Subsample 2 (1990–2006)
UNDER IPO	0.111	0.540	1.652	2.545
	[13.962]	[14.899]	[13.914]	[14.938]
Ln (SEO/IPO)	-18.547**	-19.475**	-21.421***	-21.364**
	[7.231]	[8.728]	[7.296]	[8.740]
AB RET 20	-3.032	-14.347	1.613	-12.819
	[23.956]	[26.433]	[23.954]	[26.301]
AB RET 40	-5.004	-11.03	-0.438	-8.804
	[26.691]	[29.370]	[26.741]	[29.362]
6 months dummy or Ln ΔT	-32.358**	-36.714**	16.368***	19.525***
	[15.672]	[17.048]	[5.709]	[7.414]
Tobin's Q	6.167***	6.275***	6.485***	6.442***
	[1.883]	[1.998]	[1.885]	[1.997]
ROA	68.084***	59.305**	66.185***	61.043**
	[25.575]	[28.571]	[25.557]	[28.536]
CAP EXP RATIO	-63.402	-55.825	-66.486	-56.558
	[56.046]	[68.979]	[55.963]	[68.905]
Ln(Total Assets)	8.212	11.195*	9.371*	12.022*
	[5.250]	[6.220]	[5.269]	[6.229]
FCF	7.278*	3.243	7.345*	3.084
	[3.891]	[4.475]	[3.886]	[4.471]
AGE	-0.320	-0.360	-0.383	-0.403
	[0.272]	[0.317]	[0.273]	[0.318]
Intercept	-198.542	-201.776	-303.061	-326.751**
	[232.944]	[144.213]	[233.767]	[152.149]
Industry and year dummies	Not reported	Not reported	Not reported	Not reported
Sample size	1,532	1,169	1,532	1,169
Adjusted R^2	0.0463	0.0185	0.0488	0.0205

Note: The dependent variable is the BHAR of SEOs in percentages, computed as the difference between the BHRs of sample firms and the matching firms selected by size, industry, and book–to–market over a three–year holding period. 6 months dummy (SEO within 6 months of IPO) is a dummy variable that takes on the value of 1 if the number of calendar days between IPO and the first SEO is less than 6 months. Ln ΔT is the logarithm of the number of calendar days between IPO and the first SEO. UNDER IPO is IPO underpricing, defined as the difference between the first post–issue price and the IPO offer price divided by the offer price. AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. Tobin's Q is the ratio of a firm's total market value of assets to total book value of assets. ROA is the OIBD (operating income before depreciation) normalized by total assets. CAP EXP RATIO is capital expenditures scaled by total assets. Ln (SEO/IPO) is the logarithm of the relative size of SEO and IPO. The independent variables also include dummy variables for industry and the year of SEO. AGE is the number of years since the founding date of the firm to the year issuing SEO. Standard errors are in brackets. *, **, and *** denote significance level at the 10%, 5%, and 1% levels.

Table 7
Monthly Cross–Sectional Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	1.105***	1.460***	1.355***	1.46***	1.171***	1.104***	1.171***
	[2.69]	[5.06]	[4.45]	[5.06]	[2.94]	[2.69]	[2.94]
Ln MV EQ	0.091**				0.097**	0.091**	0.097**
	[1.98]				[2.12]	[1.99]	[2.13]
Ln B/M	0.25***				0.241***	0.25***	0.241***
	[5.25]				[5.15]	[5.25]	[5.15]
ISSUE		–0.470***		–0.466***	–0.42***		–0.415***
		[–3.84]		[–3.86]	[–3.7]		[–3.72]
ISSUE 6 Month			–0.968***	–0.649*		–0.974***	–0.695**
			[–2.62]	[–1.95]		[–2.64]	[–2.08]
Avg R^2	0.019	0.003	0.0001	0.004	0.022	0.019	0.022
# months	444	444	444	444	444	444	444

Note: The sample consists of all firms listed on NASDAQ, AMEX, or NYSE during 1970–2006. Ln MV EQ is the logarithm of the market value of equity. Ln B/M is the logarithm of B/M, using the book value of equity for the most recent fiscal year end. ISSUE is a dummy variable that takes the value of 1 if a company conducted at least one public equity offering (SEO or IPO) within the 60 months preceding a given June 30th. ISSUE 6 Month is dummy variable that equals 1 if a company conducted SEO within 6 months of its IPO. The dependent variable is the firm's monthly percentage stock return. T–statistics are listed in brackets. *, **, and *** denote significance levels at the 10%, 5%, and 1% levels.

Model (2) $r_{it} = a + b \ln MV_{it} + c \ln BV/MV_{it} + d\ ISSUE_{it} + e\ ISSUE6month_{it} + \varepsilon_{it}$

Table 8
Monthly Alphas Using Fama–French Three–Factor Model

Panel A: Issuers vs. Nonissuers				**Panel B: Early Issuers vs. Late issuers**			
	Issuers	Nonissuers	Difference		< 6 months	≥6 months	Difference
All firms	–0.27	0.21	–0.50	All issuers	–0.89	0.12	–1.09
	[–1.66]*	[2.03]*	[–4.94]***		[–1.97]**	[1.06]	[–2.62]***
Large firms	0.17	0.29	–0.13	Large issuers	–0.13	0.28	–0.41
	[1.01]	[4.18]***	[–1.02]		[–0.26]	[3.02]***	[–0.86]
Small firms	–0.70	0.13	–0.86	Small issuers	–0.56	–0.01	–0.73
	[–3.62]***	[0.91]	[–7.46]***		[–0.63]	[–0.08]	[–0.84]

Note: The sample consists of all firms listed on NASDAQ, AMEX, or NYSE during 1970–2006. Large firms are those whose market capitalization on June 30 of year *t* is greater than the market capitalization of the median company in the sample. Small firms are those whose market capitalization is below the median. The monthly data for the market, size, and book–to–market factor returns are obtained from French's website. Panel A reports regression alphas for portfolios of issuers and nonissuers and the difference in alphas. Panel B reports regression alphas for portfolios of issuers conducting SEOs within 6 months of IPOs (early issuers), issuers conducting SEOs after 6 months of IPOs (late issuers), and the difference in alphas. T–statistics are listed in brackets. *, **, and *** denote significance level at the 10%, 5%, and 1% levels.

Model (3) $\left(R_{pt} - R_{ft}\right) = a + b\left(R_{mt} - R_{ft}\right) + s\ SMB_t + h\ HML_t + \varepsilon_t$

Table 9
Aftermarket Returns and Investments

	6 Months Dummy		Ln ΔT	
	Full Sample (1970–2006)	Subsample 2 (1990–2006)	Full Sample (1970–2006)	Subsample 2 (1990–2006)
AB RET 20	-8.249***	-8.366***	-5.758**	-6.631***
	[2.479]	[2.799]	[2.299]	[2.495]
AB RET 40	1.196	0.76	1.146	0.651
	[2.678]	[2.840]	[2.678]	[2.693]
6 months dummy or Ln ΔT	-3.004*	-3.404*	1.457**	1.238
	[1.714]	[1.995]	[0.582]	[0.816]
AB RET 20 × 6 months (Dummy)	6.117	5.281		
	[4.445]	[4.657]		
AB RET 40 × 6 months (Dummy)	-1.374	0.360		
	[5.498]	[6.100]		
B/M	-0.422	-0.569	-0.379	-0.531
	[0.457]	[0.396]	[0.456]	[0.405]
FCF	0.206***	0.171***	0.201***	0.169***
	[0.044]	[0.040]	[0.043]	[0.039]
ROA	6.097**	2.955	5.488**	2.656
	[2.758]	[2.719]	[2.700]	[2.608]
Ln(Total Assets)	3.284***	3.780***	3.420***	3.875***
	[0.908]	[0.990]	[0.902]	[0.982]
Intercept	27.328***	-10.236	17.532**	-18.492**
	[5.545]	[7.046]	[7.196]	[9.186]
Industry and year dummies	Not reported	Not reported	Not reported	Not reported
Sample size	1,451	1,115	1,451	1,115
Adjusted R^2	0.25	0.268	0.252	0.27

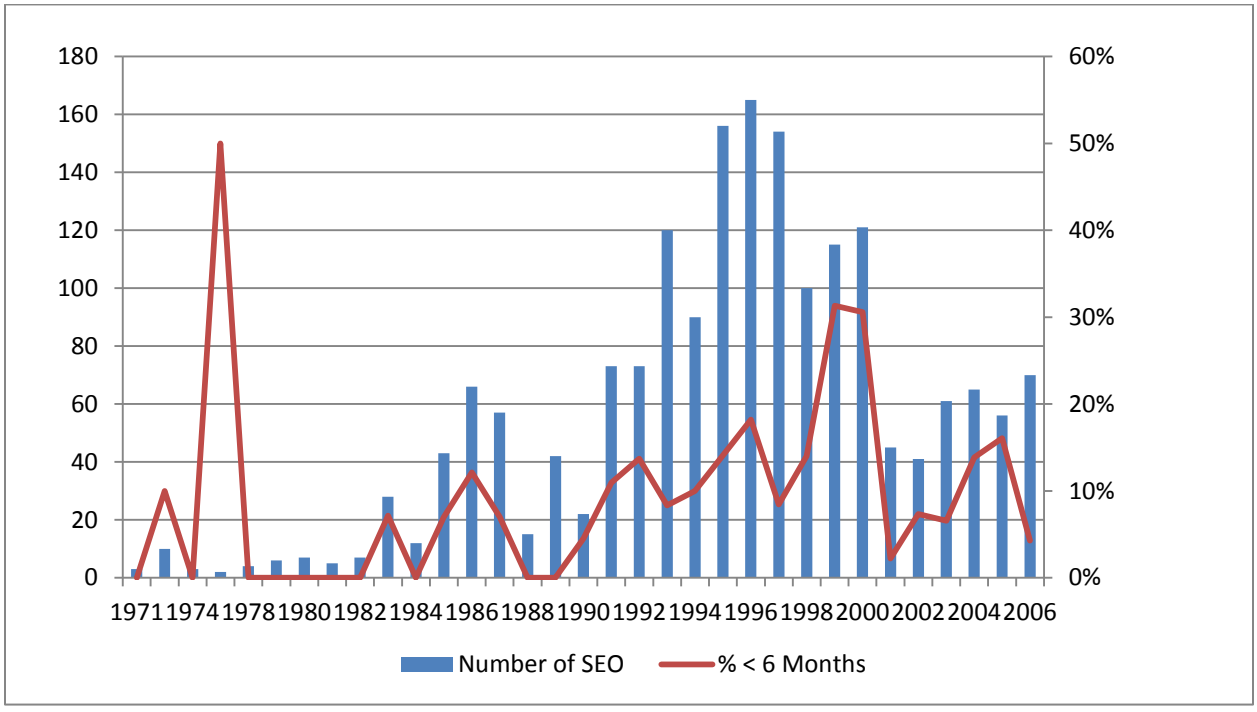
Note: The table reports an OLS regression estimating the determinants of corporate investment. The dependent variable is corporate investment measured by total net property, plant and equipment. 6 months dummy (SEO within 6 months of IPO) is a dummy variable that takes on the value of 1 if the number of calendar days between IPO and the first SEO is less than 6 months. Ln ΔT is the logarithm of the number of calendar days between IPO and the first SEO. AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. B/M equals the ratio of book value of equity to market value of equity. FCF is the free cash flow. The cash flow measure is scaled by the firm's beginning–of–year capital. ROA is the OIBD (operating income before depreciation) normalized by total assets. Industry and year dummy variables are included in the regression but results are not reported. Standard errors are in brackets. *, **, and *** denote significance level at the 10%, 5% and 1% levels.

Table 10
Changes in Operating Performance: Median ROA (%)

Year	Less than 6 months			More than 6 months			Difference
	N	Unadjusted	Adjusted	N	Unadjusted	Adjusted	in Adjusted
–1	217	8.49	0.01	1,462	12.47	0.00	0.01
+1	169	5.58	–2.70**	1,247	11.13	0.20	–2.90**
+2	153	6.87	–2.22**	1,141	10.67	0.77***	–2.99***
+3	138	6.39	–3.27**	1,073	10.52	0.91**	–4.18***
–1 to 1			–3.03**			0.00	–3.03***
–1 to 2			–4.05***			0.47**	–4.52***
–1 to 3			–4.07**			0.78**	–4.85***

Note: This table reports the median operating performance for issuers and nonissuers matched on industry and pre–issue operating performance. The matching procedure follows Barber and Lyon (1996). The adjusted operating performance is the paired difference between the ROA of the issuing firms and the ROA of their matching nonissuing firms. We categorize the issuing firms by the length of time since IPO at the date of first SEO. The tables reports the median OIBD (operating income before depreciation) scaled by assets. Statistical tests are based on the Wilcoxon signed–rank test. *, **, and*** denote significance level at the 10%, 5%, and 1% levels.

Figure 1: Number of SEOs by Year and Proportion of Early SEOs



Appendix: Definitions of Variables (COMPUSTAT Items)

Phrase Used in Text	Acronym	Definition	COMPUTSAT XPF NAME
Total Assets	Total Assets		AT
Operating Income Before Depreciation	OIBD		OIBDP
Number of Shares Outstanding	Shrs Out		CSHO
Book Value of Equity	BV EQ		CEQ
Capital Expenditures	Cap Exp		CAPX
Share Price	Price		PRCC_F
Market Value of Equity	MV EQ	Share Price × Shares Outstanding	PRCC_F × CSHO
Book–to–market	B/M	BV EQ ÷ MV EQ	
Tobin's Q		Total Market Value of assets÷ Total book value of Assets	(AT–CEQ+MV EQ) ÷ AT
Return on Assets	ROA	OIBD ÷ Total Assets	
Cap Exp Ratio		Cap Exp ÷ Total Assets	CAPX ÷ AT
Free Cash Flow	FCF	Net Income After Tax + Depreciation + Amortization – Dividends – Preferred Dividends	NI + DP – DVC – DVP
IPO SIZE		Amount of Equity Capital Raised by IPO	
SEO SIZE		Amount of Equity Capital Raised by SEO	
SEO/IPO		SEO SIZE ÷ IPO SIZE	
SEO/MV EQ		SEO SIZE ÷ MV EQ	
ΔT (days)	ΔT	Number of calendar days between IPO and first SEO.	
Underpricing IPO	Under IPO	(1^{st} post–issue price – IPO offer price) ÷ IPO offer price	
Abnormal Return IPO (1 – 20)	AB RET 20	IPO abnormal return from trading day 1 to trading day 20 after IPO date.	
Abnormal Return IPO (21 – 40)	AB RET 40	IPO abnormal return from trading day 21 to trading day 40 after IPO date.	
SEO AR	Equation 1	SEO Abnormal Return = SEO 3–day announcement–period return; from event day –1 to +1, where day 0 = filing date.	